

Application No. 09/973,019
Reply to Office Action of June 18, 2003

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1 and 3-7 are presently active, Claims 8-18 having been withdrawn from consideration, Claim 2 having been canceled without prejudice, and Claims 1 and 3 having been amended by way of the present amendment.

In the outstanding Office Action, the drawings were objected to for not showing every feature of the invention specified in the claims. Claim 1 was objected to due to an informality. Claims 1 and 2 were rejected under 35 U.S.C. § 102(b) as being anticipated by Kang et al (U.S. Pat. No. 5,278,441). Claims 3 and 5-7 were objected to as being dependent from a rejected base claim, but would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims.

Firstly, Applicants acknowledge with appreciation the indication of allowable subject matter in Claims 3 and 5-7. To expedite prosecution of the present application, Claim 2 has been canceled, and Claim 3 has been rewritten in independent form including all the limitations of Claims 1 and 2. Accordingly, it is respectfully submitted that independent Claim 3 and Claims 5-7 which depend from Claim 3 are in a condition for allowance.

Regarding the objection to the drawings, new Figure 20B depicts a third N-type transistor and a fourth P-type transistor as specified in the claims. In addition, related descriptions associated with Figure 20B have been added to the specifications. Further, minor informalities in Figures 9B have been addressed on the replacement drawing sheet attached herewith containing Figures 9A and 9B. Thus, it is respectfully submitted that the

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objection to the drawings has been overcome.

Regarding the objection to Claim 1, Claim 1 has been amended as suggested in the outstanding Office Action. Thus, it is respectfully submitted that the objection to Claim 1 has been overcome.

Finally, Claim 1 has been amended to include features previously recited in Claim 2 and to include a new feature related to the depths of the diffusion layers of the respective high and low impurity concentration diffusion layers. As described in the specification, P⁺ (or N⁺) diffusion layers 11a and 11b (or 6a and 6b) are formed in upper and outer portions of the P⁻ (or N⁻) diffusion layers 35a and 35b (or 36a and 36b), respectively, in a surface region of the substrate 1 apart from the gate 13 (or 18).¹ As such, the P⁺ (or N⁺) diffusion layers are formed inside of the P⁻ (or N⁻) diffusion layer in both horizontal and vertical directions, as depicted in Figure 1. In other words, the depths of the P⁺ and N⁺ diffusion layers are shallower than the depths of the P⁻ and N⁻ diffusion layers.

Kang et al depict in Figure 5G, that the depths of low impurity concentration diffusion layers 80, 81 and 83, 84 are shallower than the depths of the high impurity concentration diffusion layers. Claim 1 as presently amended defines a relationship inverse to the configuration depicted in Kang et al in that the depths of the low impurity concentration diffusion layer in Claim 1 are deeper, not shallower, than the depths of the higher impurity concentration diffusion layers.

Accordingly, in the semiconductor device of Claim 1, there are two advantages. One,

¹Specification, page 21, lines 7-10 and 20-24.

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the claimed structure gives a higher junction breakdown voltage than that in the configuration depicted in Kang et al. Second, the claimed structure provides a larger process margin against thermal processes which might cause changes in impurity profiles in the diffusion layers.

Similarly as noted in Applicants' previous reply to the Office Action of January 10, 2003, Applicants further submit that there exists a significant difference between the claimed position of an effective lower end of the outer surface of a second gate side wall being within a surface region of the second low impurity concentration impurity diffusion layer and outside of a surface region of the second high impurity concentration diffusion layer, and that of the configuration depicted in Kang et al.² In both Kang et al and in Applicants' Figure 22, a lower end of an outer surface of the second gate side wall is positioned within a surface region of the second low impurity concentration diffusion layer and the second high impurity concentration diffusion layer. In the semiconductor device of Claim 1, an effective lower end of an outer surface of the second gate side wall is positioned *within* a surface region of the second low impurity concentration diffusion layer, but is positioned *outside* of a surface region of the second high impurity concentration diffusion layer.

For example, Applicants' Figure 1 and the description in the specification indicate the formation of a P+ (i.e. a second high impurity concentration) diffusion layer by using as a mask a third side wall formed outside of a second side wall.³ As such, the third side wall is formed only as a mask for forming the P+ diffusion layer, is removed after making the P+

²Responses filed April 10, 2003, page 5, line 1-21.

³Specification, page 28, lines 6-21.

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diffusion layer, and thus is not present in the final structure.

Thus, for the above-noted reasons, it is respectfully submitted that neither Kang et al nor Applicants' Figure 22 anticipate the semiconductor device of presently amended Claim 1.

Hence, it is respectfully submitted that Claim 1 and Claim 4 which depends from Claim 1 patentably define over the applied prior art.

Lastly, this amendment is submitted in accordance with 37 C.F.R. §1.116 which after final rejection permits entering of amendments canceling claims, complying with any requirement of form expressly set forth in a previous Office Action, or presenting rejected claims in better form for consideration on appeal. The present amendment addresses the drawing objection and claim objections, rewrites objected to Claim 3 to be in independent form, cancels Claim 2, and includes the subject matter of Claim 2 with clarification into Claim 1, thereby placing the claims in better form for consideration on appeal. No new matter has been added, and the amended claims are not believed to raise significant new issues requiring further consideration and/or search. It is therefore respectfully requested that the present amendment be entered under 37 C.F.R. §1.116.

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Consequently, in view of the present amendment and in light of the above discussions, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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